Amendments to the Specification:

Please replace paragraph [0006] with the following amended paragraph:

[0006] The present disclosure provides a system for delivering a desired mass of gas. The system includes a chamber, a first valve controlling gas flow into the chamber, a second valve controlling gas flow out of the chamber, a pressure transducer providing measurements of pressure within the chamber, ~~an input device for providing a desired mass of gas to be delivered from the system,~~ and a controller <u>that is</u> connected to <u>and controls the operation of</u> the valves[[,]]<u>.</u> <u>The controller is connected to</u> the pressure transducer and <u>is also configured and arranged to receive a setpoint, e.g., from an</u> ~~the~~ input device<u>, for the desired mass of gas to be delivered by the system</u>. The controller is programmed to receive the <u>setpoint for the</u> desired mass of gas ~~through the input device~~, close the second valve and open the first valve, receive chamber pressure measurements from the pressure transducer, and close the inlet valve when pressure within the chamber reaches a predetermined level.

Please replace paragraph [0008] with the following amended paragraph:

[0008] According to one aspect of the present disclosure, the ~~mass~~ discharged Δm is equal to $\Delta m = m(t_0) - m(t^*) = (V/R)[(P(t_0)/T(t_0)) - (P(t^*)/T(t^*))]$, wherein $m(t_0)$ is the mass of the gas in the delivery chamber at time $= t_0$, $m(t^*)$ is the mass of the gas in the delivery chamber at time $= t^*$, V is the volume of the delivery chamber, R is equal to the ~~universal~~ <u>ideal</u> gas constant (~~8.3145~~ J/~~mol~~ <u>Kg-</u>K), $P(t_0)$ is the pressure in the chamber at time $= t_0$, $P(t^*)$ is the pressure in the chamber at time $= t^*$, $T(t_0)$ is the temperature in the chamber at time $= t_0$, <u>and</u> $T(t^*)$ is the temperature in the chamber at time $= t^*$.

Please replace paragraph [0022] with the following amended paragraph:

[0022] Referring to Fig. 1, the present disclosure provides an exemplary embodiment of a mass flow delivery system 10, and, in Fig. 2, the present disclosure provides an exemplary embodiment of a method 100 for delivering mass flow. The system 10 and method 100 are particularly intended for delivering contaminant-free, precisely metered quantities of process gases to semiconductor process chambers. The mass flow delivery system 10 and method 100 actually measure the amount of material (mass) flowing into the process chamber. In addition, the system and method provide for highly repeatable and precise delivery of quantities of gaseous mass for use in semiconductor manufacturing processes, such as atomic layer deposition (ALD) processes. Prior to describing the system 10 and method 100 of the present disclosure, however, an example of an atomic layer deposition apparatus is first described to provide background information.

Please replace paragraph [0031] with the following amended paragraph:

[0031] An input device 22 of the mass flow delivery system 10 may be used to provide ~~receives~~ a command setpoint representative of the desired mass flow (either provided directly from a human operator or indirectly through a wafer processing computer controller), and a computer controller (~~i.e.~~e.g., a computer processing unit or "CPU") 24 is connected to the pressure transducer 18, the temperature sensor 20, the valves 14, 16 and the input device 22. The input device 22 can also be used to input other processing instructions. An output device 26 is connected to the controller 24 and provides an indication (either directly to ~~from~~ a human operator or indirectly through a wafer processing computer controller) of the mass delivered by the system 10. The input and the output devices 22, 26 may be combined into a single unit, such as a personal computer with a keyboard and monitor.

Please replace paragraph [0033] with the following amended paragraph:

[0033] According to one exemplary embodiment of the disclosure, the controller 24 of the mass flow delivery systems 10 of Fig. 1 carries out the method 100 of Fig. 3. Referring to Figs. 1

and 3, the controller 24 is programmed to receive the desired mass flow value (i.e., setpoint) through the input device 22, as shown at 102 of Fig. 3, close the outlet valve 16, as shown at 104 of Fig. 3, open the first or inlet valve 14 to the chamber 12, as shown at 106 of Fig. 3, measure pressure within the chamber using the pressure transducer 18, as shown at 108 of Fig. 3, and close the inlet valve 14 when pressure within the chamber 12 reaches a predetermined level, as shown at 110 of Fig. 3. The predetermined level of pressure is user defined and can be provided through the input device 22. The predetermined level of pressure can comprise, for example, 200 torr.

Please replace paragraph [0034] with the following amended paragraph:

[0034] After a predetermined waiting period, wherein the gas inside the chamber 12 can approach a state of equilibrium, the outlet valve 16 is opened to discharge a mass of gas from the chamber 12, as shown at 112 of Fig. 3. The predetermined waiting period is user defined and can be provided through the input device 22. The predetermined waiting period can comprise, for example, 3 seconds. The outlet valve 16 is then closed when the mass of gas discharged equals the user defined desired mass flow setpoint, as shown at 114 of Fig. 3. The outlet valve 16 is opened for only a very short period (e.g., 100 to 500 milliseconds). ~~The controller 24 then provides~~ An indication of the mass of gas discharged by the system 10 is preferably provided by the controller 24 to the output device 26.

Please replace paragraph [0038] with the following amended paragraph:

[0038] The density dynamics within the delivery chamber 12 [[is]] can be described by the following equation:

Please replace paragraph [0040] with the following amended paragraph:

[0040] The ~~Temperature~~ temperature dynamics within the delivery chamber 12 [[is]] can be described by the following equation:

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Please replace equation (3) on page 10 of the specification with the following equation:

$$dT/dt = \underline{-}(\rho_{STP}/\rho V)Q_{out}(\gamma-1)T + (Nu\ \kappa/l)(A_w/VC_v\rho)(T_w - T) \qquad (3)$$